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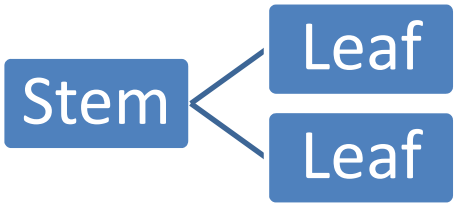
Short Essay: Data Models

Data models are a visual representation that shows how data elements are connected to one another. Their main purpose is to aid in the creation of information systems by providing format and defining the data. One famous type of model is the hierarchical model which organizes data into a sort of tree which then links each piece to another. Each data piece only holds one value and the model requires that each data "leaf" only has one "stem" (illustrated below).



This aspect of the hierarchical model that made it easy to use also held it back and prevented it from demonstrating more complicated connections. In order to display these more complex relationships data would have to be stored repetitively in multiple entities which made finding information slower and more difficult. Another famous data model is the network model, which unlike the hierarchical model, allows data pieces to have multiple "stems" and "leafs". This method allowed a more natural modeling of relationships between entities than the hierarchical model. The network model was not as popular as the hierarchical model however, and was eventually replaced by the relational model. The relational model organizes all data into tables grouped by relation. Each row in a table is known as an entity and is described by the columns. Each table has a unique attribute that identifies each entity which enables users to

quickly manipulate the data. This method of data modelling allows for a quick and easy to use database which is very structured. A more recent data model that is significantly more abstract is that of Extensible Markup Language (XML). XML was designed to describe data and is a markup language like HTML[1]. XML is used often to separate data from display and layout code, one can utilize JavaScript to read XML and update data displayed on a webpage. Because XML data is stored in a plain text format, it provides a software- and hardware- independent way of storing data which makes it much easier to create sharable data[2]. In contrast to the relational model, XML seems to be a good way to store data that is often shared or must be communicated. The relational model on the other hand, seems to be a much faster and more efficient way to store data.

[1] http://www.w3schools.com/xml/xml_whatis.asp
[2] http://www.w3schools.com/xml/xml_whatis.asp